

## FRACTURE OF THE TIBIAL TUBERCLE.

BY MARTIN W. WARE, M.D.,

OF NEW YORK,

Attending Surgeon, Good Samaritan Dispensary; Adjunct Surgeon, Genito-Urinary Department, Mount Sinai Hospital; Instructor Surgery, Post-Graduate Medical School.

A DESCRIPTION of this fracture, which it has been my rare fortune to encounter, is found wanting in the text-books of surgery and special treatises on fractures. A search of the current literature, however, has brought to light a few cases which corroborate the findings in my case.

The history is as follows: E. H., aged sixteen years, was suspending his body-weight in the vertical position while swinging on rings. He suddenly let go his grasp and, in falling to the ground, landed on his feet; his knees gave way under him and he fell on his back, unable to rise thereafter.

He was seen six hours after the injury. His right knee was swollen and discolored. The dimple normally located on either side of the ligamentum patellæ was obliterated, and there was a slight discoloration visible. The limb was in the semiflexed position and extension voluntarily was impossible. Upon placing the hand over the knee, crepitus was at once perceptible. The tubercle of the tibia was movable, and when brought down upon the head of the tibia, crepitus could be elicited. Dancing of the patella could easily be made out.

*Treatment.*—The fragment, so readily replaceable, was held in place by zinc oxide plaster, and over this a plaster cast was moulded to the limb, and absolute rest was enjoined. The cast remained on two weeks, and was again replaced for another two weeks. At the expiration of this time union was firm, but a large callus was visible at the site of the fracture. There was some stiffness. It took several months thereafter for the limb to regain its function.

The diagnosis was confirmed by a skiagraph, of which an illustration (Fig. 1) is appended.

The accompanying illustration (Fig. 2), according to Poland,<sup>1</sup> shows the tubercle to have an occasional separate centre of ossification, which eventually joins the upper epiphysis at the age of sixteen to eighteen; but, as a rule, the tubercle ossifies by extension downward of the upper epiphysis. When, therefore, a separate centre of ossification is at hand, we may speak of a true epiphyseal separation, but, as a rule, fracture exists. A communication of the synovial bursa under the ligamentum patellæ with that of the knee-joint is often present (Quain), in consequence of which an effusion into the knee-joint may be expected.

Poland (*Loc. cit.*) records ten cases, in all of which indirect violence was responsible for the injury, but in the majority of instances crepitus was absent.

Osgood's<sup>2</sup> experience in the main substantiates the observations of Poland.

In agreement with the above-mentioned authors, Schlatter,<sup>3</sup> who has most recently contributed to this subject, cites the right side as being most frequently affected, but refers to direct violence as responsible for a number of fractures. In his seven cases the knee-joint was not the seat of an effusion, and he thinks this only obtains if the whole epiphysis is torn off.

The treatment advocated by all is extension in plaster of Paris.

As to prognosis, Poland (*Loc. cit.*) says the result differs from fracture of the patella, inasmuch as osseous union may always be expected if the fragments are brought into apposition.

On the other hand, Schlatter (*Loc. cit.*) says the nearer the age of the patient approaches the period of adolescence, the less the time required for healing. In two cases it took all of two years before healing was completed.

Like in my own case, the healing of the recorded cases in each instance was followed by marked callus formation.

Bearing on this point, I wish in conclusion to refer to an affection of the tubercles of each tibia incident to direct violence inflicted on these structures due to a fall upon the knees. Tem-



FIG. 1.—Fracture of tibial tubercle.



FIG. 2.—The centres of ossification forming the head of the tibia. (Poland.)

porarily incapacitated for walking and without any medical advice, functional activity of the knee-joints was restored, but a marked increase in the size of each of the tubercles was manifest ever thereafter. This case presented itself before the advent of the X-rays, and the diagnosis could only be tentatively made.

All of the fractures of the tibial tubercle occurred in males, but O'Donoghue<sup>4</sup> records one in the case of a female.

#### LITERATURE.

<sup>1</sup> Poland. Traumatic Separation of the Epiphyses, 1901.

<sup>2</sup> Osgood. Lesions of the Tibial Tubercle occurring during Adolescence. Boston Medical and Surgical Journal, Vol. cxlviii, No. 5.

<sup>3</sup> Schlatter. Verletzungen des Schnabel foermigen Fortsatzes der Oberen Tibia-Epiphyse. Bruns klinische Beitr., Vol xxxviii, Heft 3.

<sup>4</sup> O'Donoghue. Avulsion of the Tibial Tubercle. Boston Medical and Surgical Journal, June 11, 1903.